the broad range of ATC conditions that could not be captured during the initial assessment. The TMA, used as the primary traffic management tool throughout the year, yielded an estimated annual savings of $5.6 million as a result of reduced delays. The evaluation during this extended period led to significant redesign of the configuration, scheduling, and mode-control interfaces, which reduced the workload associated with the use of the TMA. Another feature developed during FY97 to reduce controller workload was an automated delay-reporting system that for the first time provided the ATC facilities with a tool that accurately measures their performance. The TMA was also exposed to numerous anomalous events and provided the means to quickly provide solutions so that at the end of the year, the FAA had changed its acquisition strategy from one of a long-term development to a spiral deployment of the NASA prototype.

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Surface Movement Advisor

Stan Harke

The Surface Movement Advisor (SMA) is a joint Federal Aviation Administration (FAA) and NASA project whose purpose is to help current airport facilities operate more efficiently. Currently installed and operational at Atlanta-Hartsfield International Airport, SMA is demonstrating how advanced information systems technologies can be implemented to improve coordination and planning of ground airport traffic operations.

The SMA system is based on a client-server architecture. A fiber backbone between the airlines, the airport management, the ramp towers, and the FAA control tower links the SMA system together. Various traffic data are collected in real time by the SMA server. The SMA system integrates the airline schedules, gate information, flight plans, radar feeds, and runway configuration (departure split and landing direction). This integrated information is then retransmitted over the network system and shared between ramp operators, airport managers, airline operators, and FAA controllers and supervisors.

SMA provides air traffic and ramp controllers with automated aircraft identification and tracking. It combines tracking and identification data with arrival and departure flight-sequencing data (such as the surface operations and aircraft taxi routing information provided to air traffic controllers, airline operators, and airport operators).

The first SMA proof-of-concept/prototype (Build-1) has been successfully demonstrating SMA functional capabilities at the FAA-selected test site, Atlanta-Hartsfield International Airport, since early 1996.

An official report released by the FAA in October 1997 measured the cost benefit of the SMA in Atlanta conservatively at $20 million a year. The total investment was $4.1 million with a development time of only 18 months. This cost benefit was measured based on taxi times and for departures only. The report also cites benefits not quantified, including increased airline productivity, assistance to ground and ramp controllers in reduced visibility, and reduced communication time between tower and ramp, and between tower and pilots.

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